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D'Agostino Outlines NNSA's Budget Request

NNSA Administrator Thomas D'Agostino said the FY 2011 budget request is an important investment in the modern, sustainable infrastructure required to support the full range of NNSA's nuclear security missions in separate testimony before the Energy and Water Development Subcommittee of the House (March 4) and Senate (March 10) Committees on Appropriations.

The Administration has requested \$11.2 billion for NNSA in FY 2011, an increase of 13.4 percent as compared to FY 2010. D'Agostino outlined the important role NNSA plays in implementing the President's nuclear security agenda, including maintaining the nation's nuclear stockpile without testing, powering the nuclear Navy, preventing nuclear

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Secretary Chu Dedicates NNSA's HEUMF

On March 22, Secretary of Energy Steven Chu gave the keynote address at a dedication ceremony recognizing the start-up of operations at the nation's new, one of a kind storage facility for weapons-grade uranium at the Y-12 National Security Complex. The Highly Enriched Uranium Materials Facility (HEUMF) is a single, 21st century highly enriched uranium (HEU) storage facility that will replace multiple Cold War-era buildings at Y-12.

"Your work matters deeply to the safety and security of our country, and we must ensure you have the tools – like the Highly Enriched Uranium Materials Facility – to do your jobs," said Secretary Chu. "The Highly Enriched Uranium Material Facility is essential to achieving the President's vision. As we reduce our nuclear stockpile and improve security of nuclear material, we now have a modern facility capable of safely storing HEU until it can be down-blended."

Vital to the NNSA's nuclear security mission, HEUMF will securely house the nation's HEU used for maintaining the U.S. nuclear deterrent and as a source of fuel for the NNSA's Naval Reactors program. In addition to the national security role, some of the material stored at the

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START-UP OPERATIONS AT THE HEUMF: Department of Energy Secretary Steven Chu delivers keynote address for the HEUMF dedication at the Y-12 National Security Complex.

Administrator's Corner

Between the opening of the new Highly Enriched Uranium Materials Facility (HEUMF) at Y-12 and the signing of a new construction policy by the Deputy Secretary, March marks an important milestone for the future of the NNSA nuclear security enterprise.



On March 22, I had the privilege of joining Secretary Chu at the HEUMF dedication. This state of the art "Fort Knox for uranium" is our nation's central repository for HEU. From dismantling retired weapon systems, to our nuclear nonproliferation mission, to our commitment to providing the U.S. Navy with safe, sound and reliable nuclear propulsion, Y-12 and HEUMF are critical to our nation's security.

They are also critical to the future of our enterprise. As Vice President Biden said in a recent speech, "some of the facilities we use to handle uranium and plutonium date back to the days when the world's great powers were led by Truman, Churchill, and Stalin." The HEUMF replaces some of these buildings with a modern, 21st century facility that is easier to maintain, cheaper to secure, and more efficient to operate.

In fact, by condensing initial loading of the facility into 90 days or less, Y-12 has already saved about \$26 million in security costs.

HEUMF is an example of what can be done if we have sound management and the resources we need to do the job. Next up for Y-12 is the Uranium Processing Facility, which will serve as our nation's sole facility for processing uranium.

During this month's budget hearings, I was repeatedly asked about our ability to manage complex construction projects like UPF. As I told Congress, this month Deputy Secretary Poneman signed a new construction policy intended to improve the way the Department does business.

If we expect Congress to trust us with increased resources during challenging economic times, we must renew our commitment to being effective stewards of tax dollars. Under this new policy, we will spend more money up front on design so we can determine exactly what we are trying to build before we ask Congress for construction money. And we will subject these projects to independent cost estimates at each CD stage to ensure we're accurately projecting costs.

With these changes, I am confident that we can continue to build the sustainable 21st century nuclear security enterprise required to keep the American people safe and secure.

Tom D'Agostino

D'Agostino Outlines NNSA's Budget Request

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proliferation, and providing the nation with critical nuclear counterterrorism and emergency response capabilities.

D'Agostino said the request describes NNSA's crucial role in the country's nuclear security vision and President Obama's call to secure all vulnerable nuclear material around the world within four years. The \$2.7 billion request for nonproliferation includes key programs related to the President's agenda.

Speaking on the full range of nuclear security missions, D'Agostino said, "investing now in a modern, sustainable nuclear security enterprise is the right thing to do. The investment will support the full range of nuclear security missions to ensure future U.S. security."

D'Agostino said the increased resources would mean an increased responsibility to be effective stewards of the taxpayer's money and ensure the NNSA is an efficient and cost effective enterprise.

In addition to the Administrator's testimony, NNSA's Chief Operations Officer for Defense Nuclear Nonproliferation, Steven Black, appeared this month before the Energy and Water Development Subcommittee of the House Committee on Appropriations.

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NNSA Inactive Actinides Program Enables Complex Transformation

Small Projects Add Up to Big Savings

The NNSA Inactive Actinides Program, managed by the Office of Nuclear Materials Integration, continues progress toward transforming the Cold War nuclear weapons complex into a smaller, safer and more efficient nuclear security enterprise.

The Inactive Actinides Program provides the sites funding to process, package and relocate or dispose of materials at these legacy nuclear material facilities.

Since 2005, approximately

\$10 million per year has been provided to five NNSA sites resulting in an acceleration of consolidation and disposition activities for inactive actinides.

Projects have included the repackaging of plutonium materials at Lawrence Livermore National Laboratory, removal of reactor fuel and other nuclear materials from Sandia National Laboratories, disposition of depleted uranium and normal uranium from Y-12, deinventory of weapons assemblies from Pantex for dismantlement, and deinventory of materials from Los Alamos National

Laboratories such as mixed plutonium/neptunium, mixed HEU/plutonium, plutonium with mixed actinides, and americium.

Other projects include: Removal of nuclear materials from Y-12 Building 9204-4; Consolidation of SPR II/III fuel to Device Assembly Facility at the Nevada Test Site for staging to deinventory Cat I & Cat II material from Sandia. The SPR II fuel is now being transferred to LANL for size-reduction/repackaging, then shipped to Savannah River for processing/disposition, taking optimum advantage of each sites resources and capabilities.

NNSA's National Security Computing Center

The National Security Computing Center (NSCC) at Sandia National Laboratories is a user facility for top-secret level applications that require high performance computing. Its unique capabilities will be applied to help solve pressing national security problems such as cyber defense, vulnerability assessments, informatics (network discovery), space systems threats and situational awareness. The system can also be used to provide high-fidelity, physical simulations and advanced imagery processing.

"The NSCC provides a first if its kind ability for the nation," said NNSA Administrator Thomas D'Agostino. "It is also one of the first visible steps in NNSA's commitment to interagency partnerships

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HIGH PERFORMANCE COMPUTING: NNSA and Sandia National Laboratories officials cut the ribbon on the new National Security Computing Center (from left to right): Jim Chavez, Sandia director of Systems Research Center; Jerry McDowell, Sandia vice president for Defense Systems and Assessments; Dimitri Kusnezov, director of NNSA's Office of Research and Development for National Security Science & Technology; Joan Woodard, Sandia deputy director for National Security Technologies and Systems; Bob Scott of the NNSA Sandia Site Office; Victor Atkins, senior analyst in the Office of Intelligence; and James Peery, Sandia director of the Computation, Computers and Math Center.

Highly Enriched Uranium Materials

Secretary of Energy Steven Chu was joined by NNSA Administrator Thomas D'Agostino, members of Tennessee's congressional delegation, and Y-12 leadership and employees to celebrate the beginning of operations at the new Highly Enriched Uranium Materials Facility (HEUMF). The HEUMF was built to consolidate highly enriched uranium (HEU) from locations across the Y-12 into a state-of-the-art facility that will reduce operating costs and is designed to address current and future threats. It will become the central repository for the nation's HEU.

"The Highly Enriched Uranium Materials Facility is a powerful glimpse of the future of Y-12 and of the Department of Energy itself," Chu said in his keynote address. "It is a symbol of the modern national nuclear security enterprise that we are going to build in the years ahead."

HEUMF will play a major role in helping NNSA accomplish its full range of nuclear security missions, including protecting the nation's inventory of HEU. The facility is also an integral part of NNSA Administrator Tom D'Agostino's plan to move from an aging nuclear weapons complex to a 21st century national security enterprise.

"HEUMF is an example of what we are trying to accomplish as we work to transform a Cold War nuclear weapons complex into a 21st century nuclear security enterprise," D'Agostino said.

"We must invest in the tools and capabilities required to effectively manage the nuclear weapons stockpile and support the full range of nuclear security missions. HEUMF does this."

The construction of HEUMF began at Y-12 in 2004 as part of that transformation process. The facility was completed four years later – ahead of schedule – in 2008, and HEU loading



DEDICATION CEREMONY: NNSA Administrator D'Agostino (left) and Department of Energy Secretary Chu (right) unveil dedication plaque at HEUMF.



HEU CONSOLIDATION: The Highly Enriched Uranium Materials Facility at Y-12.

Facility Dedication

commenced in early 2010. As of the dedication on March 22, most of the HEU at Y-12 was loaded into the new facility, well ahead of the original 13 month timeline. This accelerated loading schedule alone saved Y-12 approximately \$26 million



in security costs.

"With HEUMF, you have shown what can be done if we have sound

management and the resources we need to do the job," said D'Agostino. "HEUMF is an important example of our vision for the future of the nuclear security enterprise and the principles and objectives underpinning that vision."

HEUMF is one of two facilities whose joint mission will be to accomplish the storage and processing of all enriched uranium in one small, centralized area at Y-12. Design work on the second building – the Uranium Processing Facility – is under way.

HEUMF STORAGE: Paul Hight (right) of Y-12's Material Management organization demonstrates the HEUMF rackable can storage system to Department of Energy Secretary Steven Chu (center) as (from left) Congressman Lincoln Davis, B&W Y-12 President and General Manager Darrel Kohlhorst, and Congressman Zach Wamp look on. HEUMF has a storage capacity of 24,000 containers.

About HEUMF

- *The largest construction project at the Oak Ridge facility in more than 40 years*
- *Sometimes referred to as the "Fort Knox for uranium," HEUMF is the nation's central repository for HEU*
- *The facility is a large, primarily reinforced concrete structure (approximately 300 ft. by 475 ft.) with adjoining equipment and administrative area*
- *It will provide storage capacity for thousands of containers of material to be held in specially designed storage racks*
- *HEUMF was constructed with 91,000 cubic yards of concrete, 5,800 tons of rebar and more than 1.5 million linear feet of wiring*
- *Construction of the \$549 million HEUMF began in 2004 and was completed in 2008 ahead of schedule*

The Science of Nuclear Security

New Application for NNSA Weapons Code

For years, physicists and researchers at NNSA's Lawrence Livermore National Laboratory (LLNL) have been using advanced computerized hydrodynamic codes

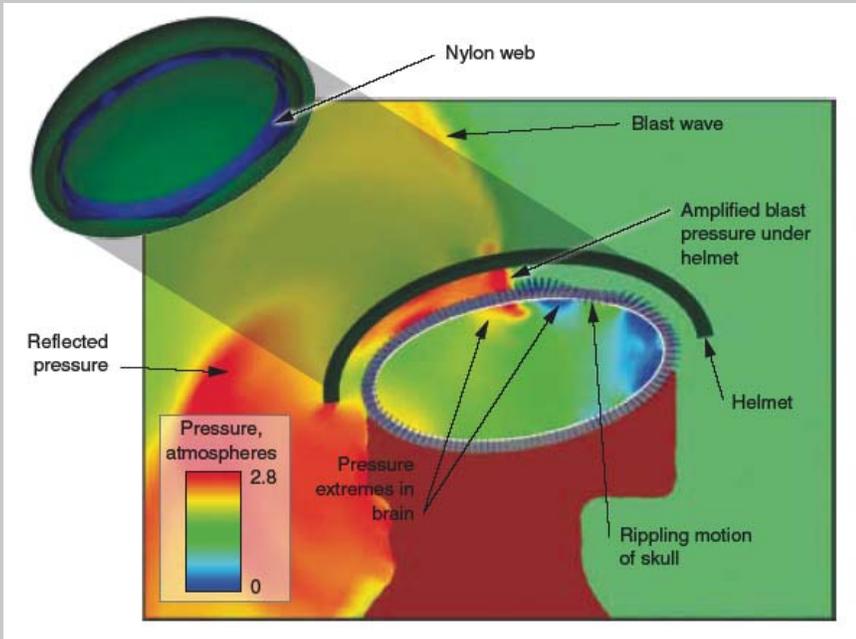
Originally funded through the Departments of Energy and Defense under the Joint Munitions Program, the TBI research team applied advanced

blasts. The effect is similar to that of dough being pressed under a rolling pin. In fact, even without direct head impact, the blasts induce enough skull flexure to generate potentially damaging pressure loads in the brain.

NNSA's LLNL is uniquely suited to conduct this important research. The lab's hydrodynamic codes, which run on massively parallel computing hardware, can simulate how a blast generates waves of pressure and how those waves propagate and interact with any structures in their path, from armor and helmets to vehicles,

MODELLING BLAST WAVES:

Simulations show that the older suspension-type helmet amplifies the blast pressure under the helmet, increasing the pressure extremes in the brain.



to study the fluid-like flow and shock responses of materials exposed to the effects of a nearby detonating weapon.

Today, researchers are applying the same sophisticated codes originally developed to support the lab's stockpile stewardship mission to better understand the mechanisms of traumatic brain injuries (TBI), like those often experienced by modern soldiers encountering improvised explosive devices (IED) in Iraq and Afghanistan.



software code and leveraged NNSA's powerful supercomputing capability at the lab to model the effects of a nonlethal blast wave on the human brain – with surprising results. The simulations unexpectedly revealed that the skull flexes from relatively low-pressure, nonlethal

buildings, and other soldiers. Complementing these computational capabilities are the High Explosives Applications Facility and Site 300 – LLNL's remote experimental test site – where experiments can be designed to replicate small-scale battlefield blasts.

The effects of head impact and resulting injuries have been extensively studied, however the TBI team is the first to research the trauma caused by blast-induced skull deformation. Their research could soon have real-world applications to better protect against head trauma such as redesigned helmets for the military. Today, the program also receives direct support from the DoD's Joint IED Defeat Organization.

**Secretary Chu
Dedicates NNSA's
HEUMF**

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state-of-the-art facility will be downblended for use in power, research or medical isotope production reactors.

The largest construction project at the Oak Ridge facility in more than 40 years, the \$549 million HEUMF was completed in 2008 ahead of schedule. Y-12 found further cost savings by accelerating the HEU loading schedule at the site this year. A project once expected to take 13 months, the loading will now be completed within 90 days and will save about \$26 million in security costs.

In his remarks Secretary Chu personally thanked the workers who helped build the new facility and accelerated the start of operations.

Secretary Chu was joined by NNSA Administrator Thomas D'Agostino, Y-12 leadership, Tennessee U.S. Representatives Zach Wamp and John J. Duncan Jr., and more than 1,000 Y-12 employees. The event was also live-streamed internally so employees not able to attend could view the proceedings at their workstations.

As of the dedication, most of the HEU stored at Y-12 was successfully transferred to the new secure facility.

NNSA Launches New Military Academic Collaborations

NNSA's Office of Defense Programs has created a new collaboration between NNSA's national laboratories and production sites and the U.S. Military Academies and Reserve Officer Training Corps (ROTC) programs at various universities.

Gen. Garrett Harencak, principal assistant deputy administrator for Military Application at NNSA.

The centerpiece of the program is a military academy cadet/midshipman and officer program that will reconstitute past military academic research programs conducted at the



ENHANCING COLLABORATIONS: Brig. Gen. Garrett Harencak, NNSA principal assistant deputy administrator for Military Application speaks at Lawrence Livermore National Laboratory's ROTC Day.

The program, called the Military Academic Collaborations (MAC), will provide cadets and midshipmen from West Point, the Naval Academy, the Air Force Academy and the Coast Guard Academy, as well as ROTC candidates, the opportunity to engage in NNSA's nuclear security mission.

"Enhancing collaborations between NNSA and the military is a great opportunity for us to showcase the work done by the talented men and women working across the nuclear security enterprise and an important part of our effort to recruit the next generation of nuclear security professionals," said Brig.

labs. The MAC program will place military academy cadets/midshipmen and officers in tours of duty within science, technology, engineering, national security and relevant fields at any of the NNSA sites. Participants from USNA, USMA, USAFA and USCGA will expand their understanding of NNSA.

This summer, the first class of about 25 cadets and midshipmen will participate at Lawrence Livermore and Sandia national laboratories as part of NNSA's Military Academic Collaborations program.

John Lehr Retires After 40 Years of Environmental Expertise

When someone had a question about an environmental management issue, John Lehr was the go-to guy.

Lehr's leadership and subject matter expertise related to NNSA environmental issues was highly regarded by his peers and management. After 40 years of dedicated federal service, Lehr has decided to retire.

"My time at NNSA was the highlight of my career," said Lehr. "Although I'm going to miss the work routine, it's the people of NNSA and DOE that I'll miss the most."

Based on his expertise and knowledge of environmental laws and regulations, Lehr was recruited by NNSA to stand up the Office Environmental Projects and Operations.

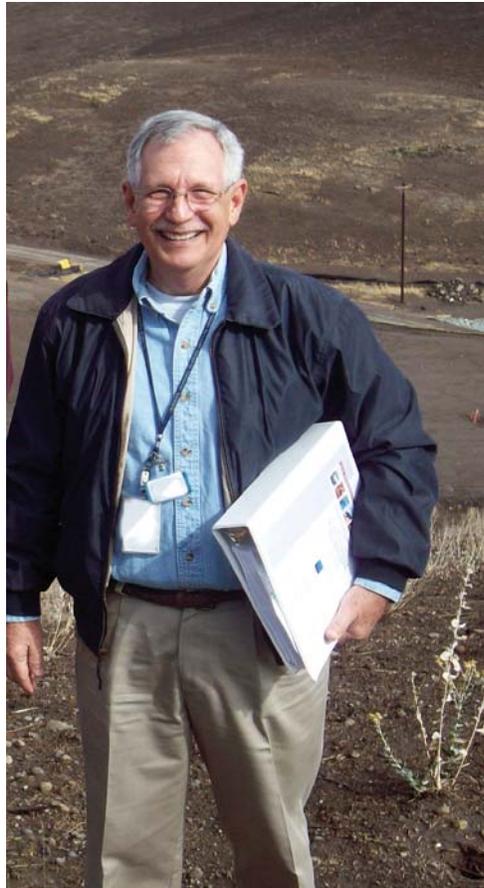
During his time at NNSA, he was notably commended for his work in conducting two in-depth reviews of regulatory commitments related to cleanup activities at Los Alamos National Laboratory.

Lehr began his career at Frankford Arsenal in the Small Caliber Ammunition Modernization Program. He then joined the Atomic Energy Commission and later transferred to the Nuclear Regulatory Commission where he led reviews on more than 100 commercial nuclear power plant licensing applications.

As one of DOE's first environmental engineers, Lehr was responsible for interpreting various acts and requirements. During his career, he led a task force that developed the overall strategy and content of a proposal for the creation of a new program for the cleanup of inactive radioactive and hazardous waste management sites throughout the DOE sites.

Having succeeded in

establishing a hazardous waste remedial action program in Defense Programs, Lehr was selected in 1989 to help develop the Office of Environmental Management. Lehr served in a number of supervisory



John Lehr

positions with EM, managing large organizations, serving as a subject matter expert and representing EM in its national education tours. He served as chairman of more than 14 national environmental restoration workshops. While in EM he led engineers and scientists to focus on the development and delivery of technical solutions for achieving environmental cleanup.

Although his routine will be different, he says he is ready for the next stage in his life.

NNSA's National Security Computing Center

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and a glimpse of our future science, technology, and engineering enterprise."

The Red Storm supercomputing platform was built at Sandia as part of NNSA's stockpile stewardship program. Listed last year as one of the top 15 fastest computers in the world, Red Storm is one of a suite of platforms across its national laboratories that NNSA's Office of Advanced Simulating and Computing (ASC) uses to ensure the United States nuclear weapons stockpile continues to be safe, secure and reliable without nuclear testing.

As part of NNSA's stockpile stewardship program, ASC computers use models and simulations to understand and predict behaviors associated with aging weapons by, among other things, gauging various stages of a nuclear explosion. NNSA's national laboratories employ the supercomputers daily to answer some of the nation's most complex scientific and engineering questions.

NNSA authorized Sandia to upgrade Red Storm to a 280 teraflop computing capacity and extend its operations for at least four to five more years. The Red Storm platform and facility are extensible, allowing them to accommodate future upgrades and improvements with minimal interruption.